

UNDERWATER BRIDGE INSPECTION REPORT

STRUCTURE NO. 84524
CSAH NO. 32
OVER THE
BUFFALO RIVER
DISTRICT 4 - WILKIN COUNTY



PREPARED FOR THE
MINNESOTA DEPARTMENT OF TRANSPORTATION
BY
COLLINS ENGINEERS, INC.
JOB NO. 3512

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

REPORT SUMMARY:

The substructure units inspected below water at Bridge No. 84524, Piers 1 and 2, were found to be in good condition with no defects of structural significance at this time. The piles exhibited coating failure, from 1.5 feet above the waterline to the mudline, with minimal related steel deterioration. Minor scour depressions were observed around most of the piles, but overall the channel bottom around the substructure units appeared stable.

INSPECTION FINDINGS:

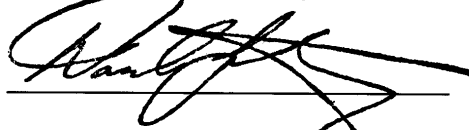
- (A) Piers 1 and 2 exhibited coating loss from 1.5 feet above the waterline to the mudline. There was minimal deterioration of the steel related to the coating failure.
- (B) Minor scour depressions were observed around most of the piles and exhibited 6 to 12 inches of depth. The largest depression was observed at the fifth pile from the southern end of Pier 1, which had a 2 foot radius and 1 foot depth.

RECOMMENDATIONS:

- (A) Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Daniel G. Stromberg

A large, stylized handwritten signature in black ink, appearing to read 'Dan G. Stromberg', is written over two horizontal lines.

Date 6/30/2004 Registration No. 21491

Respectfully submitted,

COLLINS ENGINEERS, INC.

A large, stylized handwritten signature in black ink, appearing to read 'Dan G. Stromberg', is written over two horizontal lines.

Daniel G. Stromberg
Registered Professional
Engineer, State of Minnesota

MINNESOTA DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION

1. BRIDGE DATA

Bridge Number: 84524

Feature Crossed: The Buffalo River

Feature Carried: CSAH No. 32

Location: District 4 – Wilkin County

Bridge Description: The superstructure consists of a three span reinforced concrete slab. The superstructure is supported by two reinforced concrete abutments and two steel pipe pile piers. The piers are numbered 1 and 2 starting from the west end of the bridge.

2. INSPECTION DATA

Professional Engineer/Team Leader: Shirley M. Walker, P.E.

Dive Team: Michelle D. Koerbel, Clayton G. Brookins

Date: October 29, 2002

Weather Conditions: Rain and Snow, " 35E F

Underwater Visibility: " 2 Feet

Waterway Velocity: Negligible / None

3. SUBSTRUCTURE INSPECTION DATA

Substructure Inspected: Piers 1 and 2.

General Shape: Piers 1 and 2 consist of a single line of six steel pipe piles supporting a reinforced concrete cap. Each abutment is a closed-type abutment.

Maximum Water Depth at Substructure Inspected: Approximately 1.5 feet.

4. WATERLINE DATUM

Water Level Reference: The top of the pier cap at the south end of Pier 1.

Water Surface: The waterline was approximately 9.9 feet below reference.
Assumed Waterline Elevation = 90.1.

5. NBIS CODING INFORMATION (Minnesota specific codes are used for 92B and 113)

Item 60: Substructure: Code 8

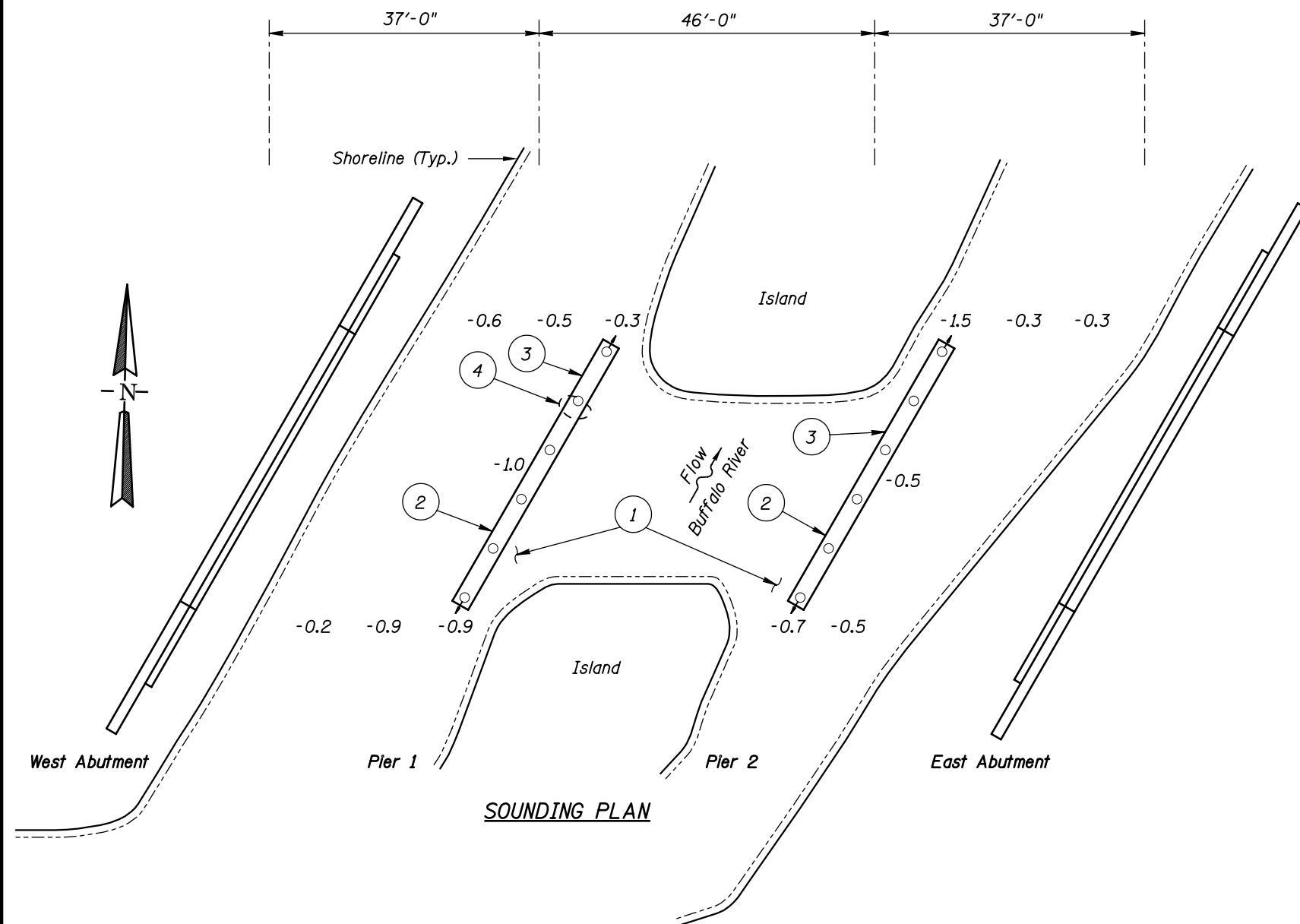
Item 61: Channel and Channel Protection: Code 7

Item 92B: Underwater Inspection: Code B/10/02

Item 113: Scour Critical Bridges: Code F/02

Bridge is scour critical because abutment or pier foundation is rated as unstable due to observed scour at bridge site.

_____ Yes X No



GENERAL NOTES:

1. Piers 1 and 2 were inspected underwater.
2. At the time of inspection on October 29, 2002, the waterline was located approximately 9.9 feet below the top of the pile cap at the upstream end of Pier 1. Since insufficient bridge elevation information was available, a reference elevation of 100.0 was assumed. Based on the assumed reference the waterline elevation was 90.1.
3. Soundings indicate the water depth at the time of inspection and are measured in feet.
4. Soundings were taken parallel to the bridge at 1/4 point intervals between the substructure units.

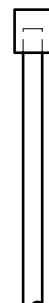
INSPECTION NOTES:

- 1 The channel bottom around both piers consisted of soft silt, sand, and random stones with up to 2 feet of probe rod penetration.
- 2 Piers 1 and 2 exhibited coating loss from 1.5 feet above the waterline to the mudline. There was minimal deterioration of the steel related to the coating failure
- 3 Minor scour depressions were observed around most of the piles and typically exhibited 6 to 12 inches of depth.
- 4 Scour depression was observed that had a 2 foot radius and was up to 1 foot deep.

Legend

- 5.2 Sounding Depth from Waterline (10/29/02)
- Cast-in-place Concrete Pile (Shell Pile)
- ⊕ Battered Cast-in-place Concrete Pile (Shell Pile)
- () Scour Depression

TYPICAL END VIEW OF PIERS

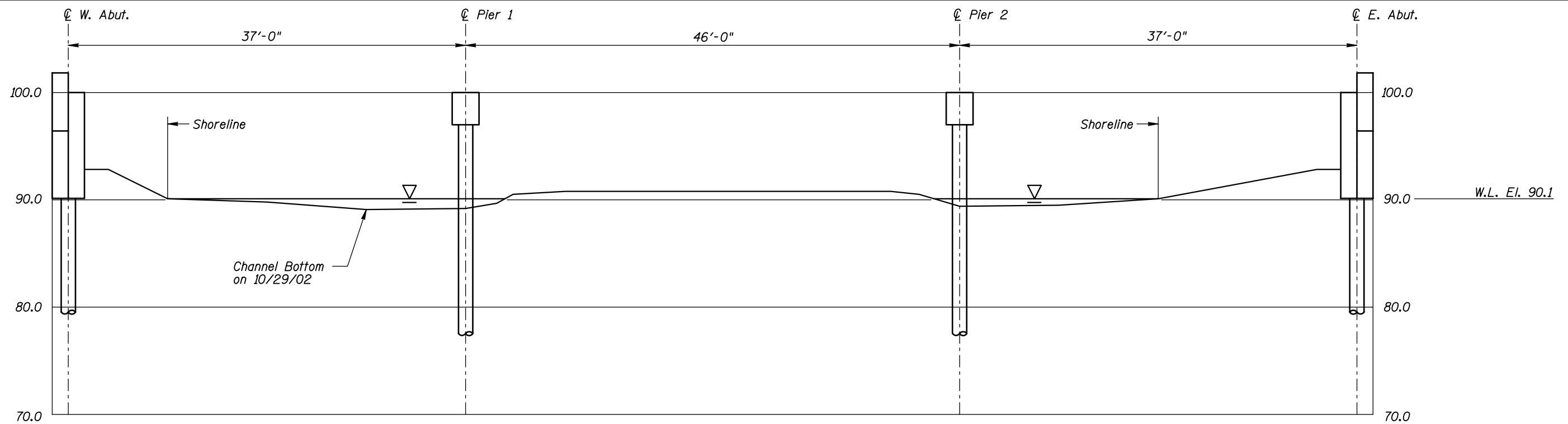


MINNESOTA DEPARTMENT OF TRANSPORTATION UNDERWATER BRIDGE INSPECTION

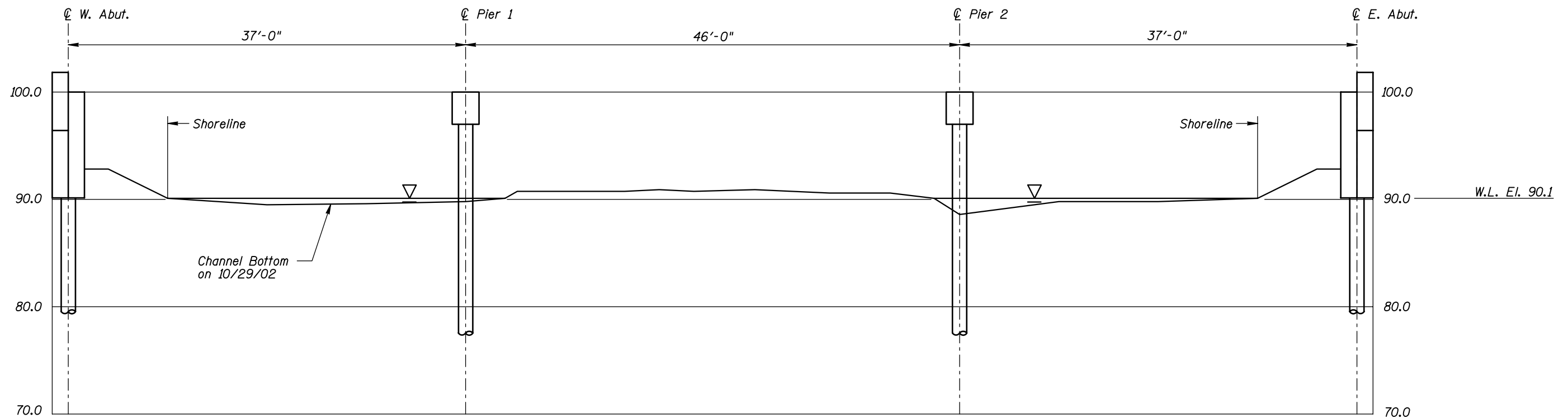
STRUCTURE NO. 84524
OVER THE BUFFALO RIVER
DISTRICT 4, WILKIN COUNTY

INSPECTION AND SOUNDING PLAN

Drawn By: PRH	COLLINS ENGINEERS, INC.	Date: OCT. 2002
Checked By: MDK	300 W. WASHINGTON, STE. 600	Scale: NTS
Code: 351284524	CHICAGO, ILLINOIS 60606 (312) 704-9300	Figure No.: 1



UPSTREAM FASCIA PROFILE



DOWNSTREAM FASCIA PROFILE

Note:
Refer to Figure 1 for General Notes.

**MINNESOTA
DEPARTMENT OF TRANSPORTATION
UNDERWATER BRIDGE INSPECTION**

STRUCTURE NO. 84524
OVER THE BUFFALO RIVER
DISTRICT 4, WILKIN COUNTY
**UPSTREAM AND DOWNSTREAM
FASCIA PROFILES**

Drawn By: PRH
Checked By: MDK
Code: 351284524

COLLINS ENGINEERS, INC.
300 W. WASHINGTON, STE. 600
CHICAGO, ILLINOIS 60606
(312) 704-9300

Date: OCT. 2002
Scale: 1"=10'
Figure No.: 2



Photograph 1. Overall View of the Structure, Looking Northeast.



Photograph 2. View of the West Abutment, Looking Northwest.



Photograph 3. View of Pier 1, Looking Northwest.



Photograph 4. View of Pier 2, Looking Northwest.



Photograph 5. View of Pier 2 and the East Abutment, Looking Southeast.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES
DAILY DIVING REPORT

INSPECTORS: Collins Engineers, Inc. DATE: October 29, 2002
ON-SITE TEAM LEADER: Shirley M. Walker, P.E.
BRIDGE NO: 84524 WEATHER: Rain and Snow, " 35E F
WATERWAY CROSSED: The Buffalo River
DIVING OPERATION: X SCUBA SURFACE SUPPLIED AIR
OTHER

PERSONNEL: Michelle D. Koerbel, Clayton G. Brookins
EQUIPMENT: Scuba, U/W Light, Scraper, Lead Line, Sounding Pole, Probe Rod, Camera
TIME IN WATER: 8:45 A.M.
TIME OUT OF WATER: 9:05 A.M.
WATERWAY DATA: VELOCITY Negligible / None
VISIBILITY " 2 feet
DEPTH " 1.5 foot maximum at Pier 2

ELEMENTS INSPECTED: Piers 1 and 2.

REMARKS: Overall, the submerged steel of the piles was in good condition exhibiting coating failure from 1.5 feet above the waterline to the mudline. There was essentially no steel deterioration related to the coating failure. Minor scour depressions were observed around most of the piles ranging in depths from 6 to 12 inches. Otherwise, the channel bottom appeared stable with no notable defects.

FURTHER ACTION NEEDED: _____ YES _____X_____ NO

Reinspect the submerged substructure units at the normal maximum recommended (NBIS) interval of five (5) years.

MINNESOTA DEPARTMENT OF TRANSPORTATION
OFFICE OF BRIDGES AND STRUCTURES

UNDERWATER INSPECTION CONDITION RATING FORM

BRIDGE NO. 84524
INSPECTORS Collins Engineers, Inc.
ON-SITE TEAM LEADER Shirley M. Walker, P.E.
WATERWAY CROSSED The Buffalo River

INSPECTION DATE October 29, 2002
NOTE: USE ALL APPLICABLE CONDITION
DEFINITIONS AS DEFINED IN THE MINNESOTA
RECORDING AND CODING GUIDE INCLUDING
GENERAL, SUBSTRUCTURE, CHANNEL AND
PROTECTION, AND CULVERTS AND WALL
DEFINITIONS TO COMPLETE THIS FORM.

CONDITION RATING

UNIT REFERENCE NO.	UNIT DESCRIPTION	MAXIMUM DEPTH OF WATER	SUBSTRUCTURE						CHANNEL					GENERAL					
			PIILING	COLUMNS, SHAFTS, OR FACES*	FOOTINGS	DISPLACEMENT	OTHER	OVERALL SUBSTRUCTURE CONDITION CODE*	SCOUR	EMBANKMENT EROSION	EMBANKMENT PROTECTION	OTHER (DRIFT/DEBRIS)	OVERALL CHANNEL & PROTECTION CONDITION	CONCRETE	STEEL	TIMBER	LOSS OF SECTION	PREVIOUS REPAIR OR MAINTENANCE	OTHER
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Pier 1	1.0'	8	N	N	9	N	8	7	8	8	N	7	N	8	N	N	N	N
	Pier 2	1.5'	8	N	N	9	N	8	7	8	8	N	7	N	8	N	N	N	N

*UNDERWATER PORTION ONLY

REMARKS: Overall, the submerged steel of the piles was in good condition exhibiting coating failure from 1.5 feet above the waterline to the mudline. There was essentially no steel deformation related to the coating failure. Minor scour depressions were observed around most of the piles ranging in depths from 6 to 12 inches. Otherwise, the channel bottom appeared stable with no notable defects.

NOTES: ATTACH SKETCHES AS NEEDED, IDENTIFY REMARK BY REFERRING TO UNIT REFERENCE NO. AND REMARK NO.
USE GENERAL SECTION TO IDENTIFY OVERALL PRESENCE OF SPALLS, CRACKS, CORROSION, ETC.